

CLIMATOLOGICAL DATA FOR JULY, 1911.

DISTRICT No. 4, LAKE REGION.

Prof. HENRY J. Cox, District Editor.

GENERAL SUMMARY.

The month of July, 1911, in district No. 4, was marked by periods of weather sharply in contrast. The excessive heat and dryness of the first decade were followed by nearly a fortnight of decided coolness and comparatively frequent showers, with a return during the closing days of the month to warm, dry conditions, especially over the middle and southern sections. On the whole, while the combined effect of these periods was to produce monthly means of temperature and precipitation not far from the normal values, yet the abnormal conditions of each were so pronounced that throughout the entire period there was very little seasonable weather in any portion of the district. The heat of the first 11 days was unprecedented; and, following as it did the prolonged warmth of May and June with only a few short intervals of cool weather, resulted in numerous cases of prostration, mounting in the larger cities into the hundreds. In many places the suffering was intensified by inability to secure ice, the supply being entirely insufficient to meet the enormously increased demand.

The lack of general rains during the early part of the month resulted in many localities in considerable injury to vegetation, and the droughty conditions of the previous months were increased still further. The extreme dryness in several sections was favorable to the outbreak and spread of forest fires, and the destruction of property in the northern portion of lower Michigan as a result of such conflagrations was very heavy.

Clear days with bright sunshine were general throughout the month, there being an average of more than 15 in nearly all parts of the Lake region, while the number of cloudy days was remarkably small. In the upper Michigan Peninsula there were eight cloudy days, but in the remaining portions of the district the average was only from three to five. Over the sections lying between Lakes Superior and Michigan rain fell on an average of 11 days, but the frequency of precipitation was considerably less elsewhere, the number falling to an average of six over lower Michigan and northern Indiana. The prevailing winds were south to west.

The following table summarizes the chief features of meteorological interest in the various portions of the district:

Portions of States lying within district No. 4.	Mean temperature.	Departure from normal.	Mean precipitation.	Departure from normal.	Greatest 24-hour precipitation.	Mean number of days—			Prevailing wind direction.
						Precipitation.	Clear.	Partly cloudy.	
Minnesota.....	64.3	-0.4	4.78	-0.03	2.65	9	13	14	w.
Wisconsin.....	70.0	+1.4	2.82	-1.47	2.30	10	17	10	sw.
Illinois.....	76.0	+3.6	2.11	-0.80	0.91	11	15	13	s.
Indiana.....	73.9	0.0	2.48	-1.10	1.65	6	18	8	w.
Upper Michigan.....	65.3	+1.4	5.87	+2.34	2.84	12	14	9	sw.
Lower Michigan.....	71.4	+1.6	1.73	-1.51	2.25	6	18	8	sw.
Ohio.....	73.7	+0.7	2.06	-1.78	2.34	7	18	9	sw.
Pennsylvania.....	72.8	+1.0	2.14	-1.07	1.17	8	13	11	s.
New York.....	71.4	+2.5	2.84	-1.22	3.71	8	18	10	sw.
Vermont.....	71.3	+2.8	3.13	-1.04	1.75	9	15	11	s.

TEMPERATURE.

With the exception of the region around extreme western Lake Superior and a small area in the southern portion of upper Michigan, where there was a slight deficiency, the mean temperature of July, 1911, exceeded the normal, the difference amounting to nearly 3° over the New York and Vermont sections, but decreasing southwestward to approximately zero over northern Indiana.

The month opened with decidedly warm weather, which followed a brief cool period that prevailed during the last few days of June. An area of barometric depression, central over Manitoba on the morning of the 1st, developed into a northeast-southwest trough which moved eastward but slowly, due to the retarding influence of persistent high pressure on the Atlantic coast, and the southerly winds and strong sunshine in its front brought excessively high temperatures to all parts of the Lake region. In fact, while the mean monthly temperatures for the various portions of the district have been exceeded in previous years, the heated period of the first decade of July, 1911, was so anomalous, both as to intensity and persistence, as to have no parallel within the scope of official record. During the 1st-2d over the northwestern sections, and the 3d-6th over the remainder of the Lake region, maximum temperatures of 100° to 110° were experienced at 125 stations, 90° to 99° at 96 stations, while but two, both lake-shore stations in upper Michigan, recorded maximum readings of less than 90°.

From the 6th to the 8th there was a slight break in the conditions of excessive heat, although temperatures continued generally above the daily normal values, but the 9th-11th marked another period of hot weather of but slightly lesser intensity than the previous one, and due to a somewhat similar distribution of atmospheric pressure.

A strong area of high pressure of great magnitude for the summer season, which had advanced eastward and southeastward from the north Pacific coast, by the morning of the 14th covered practically the whole interior of the country, and the temperatures had fallen to below normal in all sections of the Lake region. From this time until the 28th high pressure dominated the region lying east of the Mississippi River, except for the heavy storm of the 24th-25th and a few minor depressions, and little or no warm weather was experienced during the interval. The closing days of the month, however, were marked by rising temperatures, due to the approach from the west of another trough-shaped depression.

The coolest weather of the month followed just after the passage of the storm mentioned above, and with few exceptions the lowest temperatures of the period occurred during the 25th-27th. The readings of this interval were generally in the forties, and at several stations approached the previous low-temperature records for July, so that the monthly ranges were as a consequence quite large. The absolute range for the district was 79°, from a maximum of 110° at Bay City, Mich., on the 2d, to a minimum of 31° at Stephens Mine, Minn., on the 19th.

PRECIPITATION.

Over the sections to the southward of Lake Superior the amount of precipitation for the month was heavier than for any July rainfall during the previous 10 years, and in portions of the peninsula of Ontario, in the lower St. Lawrence Valley, and at a number of New York stations in the vicinity of Lake Ontario, there was an excess in the amount received for the month. Elsewhere, however, in the district there was a deficiency in rainfall, amounting generally to between 1 and 2 inches.

With the exception of the 9th-10th, the rains of the first two weeks were from local showers, generally scattered, although there were a number of heavy thunderstorms, especially in northeastern New York and the Champlain Valley, where a large amount of damage was done in localities, and in the extreme northwestern sections. The bulk of the rainfall, however, occurred during the latter half of the month. There were two periods of general rainfall during this time, as well as a number of local showers and thunderstorms, but the precipitation was very unevenly distributed in amount.

MISCELLANEOUS.

Severe storms.—As stated above, a number of thunderstorms occurring during the month were of exceptional severity and caused much damage in localities. This was especially the case in northeastern New York State on the 6th, when a series of thunderstorms wrecked many buildings, uprooted trees, and crippled telegraph, telephone, and light and power transmission services. The excessive rainfall of several of the storms of the month in New York is instanced by the following figures:

Place.	Date.	Amount.	Time of fall.	
			Inches.	Hrs. min.
Canton.....	6	0.63	0	10
Do.....	6	1.08	0	25
Oswego.....	17	1.06	0	39
Rochester.....	30	1.80	1	00
Buffalo.....	19	2.40	2	00

In Ohio the period of the 4th-9th marked the passage of several severe thunderstorms across the northern portion of the State, regarding which Prof. J. Warren Smith, section director at Columbus, says:

"On the 4th considerable corn and oats were damaged by hail in Hancock County. Several barns were unroofed and some damage was done to growing crops by a severe thundersquall in Wyandot County on the

5th. On the 6th severe damage was done to live stock, trees, and barns in Allen and Putnam Counties, and a man was struck and partially paralyzed by lightning near Toledo. Orchards were uprooted, wires blown down, and corn and oats badly damaged by high wind in Henry County on the 8th. A barn with contents, valued at \$3,000, was destroyed by lightning in Sandusky County on the 9th. An unusually severe thundersquall passed over the middle counties on the 11th. At Sandusky the wind reached a maximum velocity of 44 miles per hour. During the storm several persons and a number of sheep were killed, several churches were partly wrecked, and a number of barns were destroyed by lightning, while much damage was done to trees, fruit, service wires, and crops by the wind and hail."

The storm of the 23d-24th, however, was general in its character, and was accompanied in practically all portions of the district by the highest wind velocities of the month. The barometric depression which occasioned the high winds of this storm rapidly crossed the northern portion of the Lake region on the 24th and passed down the St. Lawrence Valley during the following day. Widespread damage from wind was reported throughout the district from Marquette, Mich., southward to Indiana and eastward to central New York. Much fruit was blown from the trees, and trees were uprooted or broken off in all sections swept by the storm, the damage in the Ontario fruit belt alone amounting to several thousand dollars. Communication was seriously interrupted and navigation on Lakes Michigan and Huron and the lower Lakes and St. Lawrence River greatly impeded. Several yachts were wrecked and a few of the larger vessels were reported to have lost their deck loads. Taken as a whole, the storm was one of the heaviest blows that have crossed the Lake region in the summer season for many years.

Forest fires.—As a result of the extreme heat and dryness of the first decade of the month, extensive forest fires broke out in the northern portion of lower Michigan. Large areas were burned over, and the towns of Oscoda and Au Sable were destroyed. The loss of property as estimated amounted to about \$1,500,000. The destruction would undoubtedly have been much greater had it not been for the showers which occurred during the latter part of the second and the first part of the third decades, which checked the spread of the flames.

Fires also occurred during the early portion of the month in the Black Mountain region of Vermont and did much damage over several hundred acres of timberland.

Snow was reported to have fallen at Bay City, Mich., and at Grayling, Mich., on the 24th, the amount at the latter place being 1 inch or more.

TABLE 1.—*Climatological data for July, 1911. District No. 4, Lake Region.*

Stations.	Counties.	Elevation, feet.	Length of record, years	Temperature, in degrees Fahrenheit.								Precipitation, in inches.								Sky.	Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmeted.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.				
<i>Minnesota.</i>																						
Cloquet.	Carlton.	800	64.6	—	—	97	1	39	21	39	6.14	+ 2.18	1.99	0	9	14	8	9	sw.	S. B. Detwiler.		
Duluth.	St. Louis.	1,133	64.6	—	—	92	1	45	16	32	5.83	+ 2.18	2.65	0	14	5	22	4	w.	U. S. Weather Bureau.		
Floodwood.	do.	1,257	6	—	—	—	—	—	—	—	6.28	—	2.25	0	8	24	5	2	nw.	M. H. Schussler.		
Stephens Mine.	do.	1,500	4	63.7	—	98	1	31	19	43	3.62	—	1.30	0	7	15	14	2	w.	Oliver Iron Mining Co.		
Two Harbors.	Lake.	614	17	63.0	—	—	—	—	—	—	—	—	—	—	0	8	8	17	6	ne.	G. W. Watts.	
Virginia.	St. Louis.	1,434	17	65.5	+ 0.8	96	1	39	22	39	3.68	—	1.17	1.68	0	10	11	18	2	w.	Oliver Iron Mining Co.	
<i>Wisconsin.</i>																						
Appleton.	Outagamie.	795	10	73.4	+ 3.3	101	2	50	25	33	1.85	—	3.11	0.55	0	11	16	10	5	sw.	Wm. O. Thiede.	
Ashland.	Ashland.	647	20	68.5	+ 0.5	100	1	47	20	35	6.07	+ 2.00	2.04	0	12	18	9	4	w.	Sam Wheeler.		
Bayfield.	Bayfield.	635	2	67.8	—	97	1	49	17	37	5.60	—	2.23	0	10	18	8	5	sw.	John P. Kiel.		
Cecil.	Shawano.	804	13	70.0	+ 1.1	103	2	41	17	50	1.95	—	1.51	0.61	0	7	14	15	2	sw.	Louis W. Schmidt.	
Florence.	Florence.	1,293	20	66.6	+ 1.0	99	2	42	18	35	7.73	+ 3.63	2.30	0	10	19	4	8	nw.	Fred S. Evans.		
Fond du Lac.	Fond du Lac.	800	25	71.7	+ 1.7	97	2	45	26	39	1.12	—	2.41	0.35	0	9	21	6	4	sw.	Geo. W. Marshall.	
Grand River Locks.	Marquette.	770	15	71.3	—	97	2	42	17	39	2.35	—	2.19	0.87	0	8	27	2	2	s.	Jerry Parkinson.	
Green Bay.	Brown.	617	25	70.4	+ 2.9	97	2	48	25	30	1.59	—	1.92	0.38	0	14	7	18	6	s.	U. S. Weather Bureau.	
Iron River.	Bayfield.	1,096	2	67.2	—	99	1	41	10	40	7.48	—	2.11	0.22	0	12	22	3	6	w.	Winfield E. Tripp.	
Keweenaw.	Keweenaw.	590	2	68.8	—	100	2	47	25	32	2.00	—	0.65	0	8	16	6	9	s.	Eugene V. Kimball.		
Manitowoc.	Manitowoc.	616	69	68.4	+ 0.9	98	2	46	30	31	2.71	—	0.86	0.93	0	10	14	13	4	sw.	Johanna Lups.	
Menasha.	Winnebago.	764	14	—	—	—	—	—	—	—	1.73	—	1.77	0.46	0	8	21	6	4	sw.	Geo. T. Allanson.	
Menomonee Falls.	Waukesha.	842	2	73.0	—	99	2	45	17	36	1.23	—	0.67	0	7	19	9	1	s.	Arthur H. Christman.		
Milwaukee.	Milwaukee.	681	40	72.6	+ 2.9	99	3	54	26	30	0.62	—	2.39	0.25	0	8	19	9	3	w.	U. S. Weather Bureau.	
New London.	Outagamie.	762	15	71.4	+ 1.2	102	2	45	17	37	1.72	—	2.75	0.56	0	9	14	7	10	nw.	August H. Pape.	
Oconto.	Oconto.	590	20	69.8	+ 0.8	100	7	47	17	31	3.30	—	0.02	0.69	0	13	14	13	4	w.	Wm. K. Smith.	
Oshkosh.	Winnebago.	744	22	71.8	+ 0.3	100	2	47	17	35	1.34	—	2.74	0.33	0	9	22	9	0	sw.	Evan Vincent.	
Pine River.	Waushara.	900	16	70.7	+ 0.7	99	2	45	17	33	2.00	—	2.14	0.42	0	11	11	15	3	sw.	Geo. H. Carpenter.	
Plum Island.	Door.	588	3	67.6	—	96	2	40	25	28	4.01	—	1.16	0	16	9	13	9	s.	Geo. C. Robinson.		
Plymouth.	Sheboygan.	813	1	71.9	—	98	2	48	17	33	1.20	—	0.28	0	9	19	9	3	sw.	Paul O. Feldrappe.		
Port Washington.	Ozaukee.	713	18	71.0	+ 2.6	103	2	51	17	34	0.52	—	2.81	0.40	0	2	19	11	1	se.	Richard C. Kann.	
Racine.	Racine.	633	14	72.4	+ 1.2	101	3	48	25	38	0.97	—	2.53	0.23	0	6	23	7	1	se.	Daniel Davis.	
Ripon.	Fond du Lac.	935	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Ripon College.	
Sheboygan.	Sheboygan.	831	12	71.6	+ 2.1	103	2	51	17	34	0.96	—	2.63	0.39	0	5	14	13	4	se.	Louis C. Meyer.	
Sturgeon Bay.	Door.	600	12	66.8	+ 1.2	99	2	42	17	33	2.85	—	1.01	0	12	11	18	2	w.	Adam N. Dier.		
Superior.	Douglas.	671	2	64.6	—	96	1	48	24	39	7.19	—	2.25	0	10	14	13	4	nw.	Edward B. Banks.		
Waupaca.	Waupaca.	857	16	70.0	+ 0.7	102	2	41	17	40	3.14	—	0.34	0.69	0	13	14	10	7	sw.	James H. Flagg.	
<i>Illinois.</i>																						
Chicago.	Cook.	823	41	76.0	+ 3.6	102	5	53	25	24	2.65	—	0.99	0.91	0	11	15	13	3	sw.	U. S. Weather Bureau.	
Highland Park.	Lake.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Jesse L. Smith.	
<i>Indiana.</i>																						
Berne.	Dekalb.	874	15	70.8	+ 1.4	99	4	40	26	34	2.85	—	0.78	0.92	0	7	20	8	3	sw.	Mrs. Josie B. Kuhlman.	
Berne.	Adams.	849	2	74.6	—	103	4	48	27	36	2.91	—	1.22	0	7	19	10	2	sw.	Henry Reusser.		
Elkhart.	Elkhart.	801	9	76.5	—	102	4	50	26	31	4.12	—	1.65	0	6	18 ^a	10 ^a	2	sw.	Dr. Miles Medical Co.		
Fort Wayne.	Allen.	775	15	73.8	+ 0.3	100	4	49	25	30	2.19	—	1.47	0.85	0	8	13	12	6	sw.	U. S. Weather Bureau.	
Hammond.	Lake.	598	20	74.0	+ 0.9	104	5	45	25	38	1.50	—	1.27	1.06	0	4	13	10	8	s.	Carson W. Whitney.	
Howe.	Lagrange.	886	6	72.5	—	99	5	46	26	35	2.36	—	1.12	0.53	0	4	20	10	0	se.	James F. Zook.	
South Bend.	St. Joseph.	726	18	73.7	+ 0.3	100	4	47	25	31	2.57	—	0.90	1.05	0	8	20	6	5	sw.	Henry H. Swaim.	
Whiting.	Lake.	606	2	74.8	—	101	4	49	25	33	1.16	—	0.85	0	6	17	9	5	sw.	D. H. Boyd.		
<i>Michigan—Upper Peninsula.</i>																						
Baraga.	Baraga.	623	9	—	—	101	3	—	—	—	4.00	+ 1.71	1.00	0	4	13	2	16	w.	D., S. S. & A. Ry.		
Bargland.	Ontonagon.	1,300	1	65.2	—	100	2	41	16 ^a	40	6.54	—	2.23	0	7	19	11	1	s.	Frank McMonigal.		
Blaney.	Schoolcraft.	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	E. S. Grierson.	
Calumet.	Houghton.	1,246	23	64.4	+ 0.1	96	1	43	24	35	5.26	+ 2.43	1.51	0	12	19	6	6	w.	U. P. Experiment Sta.		
Chatham.	Alger.	875	10	63.2	+ 0.1	101	2	35	77	46	8.81	+ 5.33	2.84	0	18	14	10	7	s.	Mrs. Sars E. McGaw.		
Deer Park.	Luce.	610	10	54.7	+ 6.9	100	1	43	17	40	4.70	+ 2.02	1.90	0	6	18	2	11	s.	G. C. Reed.		
Detour.	Chippewa.	585	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	John Nolen.	
Eagle Harbor.	Keweenaw.	622	12	63.4	+ 2.2	96	17	44	24	42	4.26	+ 1.76	2.20	0	11	11	12	8	w.	U. S. Weather Bureau.		
Escanaba.	Delta.	612	38	65.5	+ 1.0	88	2	46	17	37	6.63	+ 3.29	1.69	0	16	12	12	7	s.	W. B. Hatfield.		
Ewen.	Ontonagon.	1,147	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Mrs. Lena Truedell.	
Grand Marais.	Alger.	610	10	63.6	+ 4.2	96	2	41	24	32	5.69	+ 2.99	1.60	0	11	28	5	3	s.	T. A. Green.		
Green.	Ontonagon.	622	9	—	—	—	—	—	—	—	5.84	—	2.03	0	6	12	9	10	s.	U. S. Weather Bureau.		
Houghton.	Houghton.	668	10	65.8	+ 0.1	98	1	46	23	37	6.17	+ 3.07	2.16	0	11	12	10	9	w.	D., S. S. & A. Ry.		
Humboldt.	Marquette.	1,536	14	65.0	+ 2.9	100	2	40	13	38	3.17	+ 0.25	0.80	0	8	17 ^b	4 ^b	6	w.	Chapin Mining Co.		
Iron Mountain.	Dickinson.	1,111	10	68.6	+ 2.3	103	2															

MONTHLY WEATHER REVIEW.

JULY, 1911

TABLE 1.—Climatological data for July, 1911. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.					Precipitation, in inches.					Sky.	Prevailing wind direction.	Observers.						
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmeted.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.					
Michigan—Lower Peninsula—Continued.																						
Arbela.....	Tuscola.....	728	15	70.9	-0.1	101	5	46	26†	43	1.32	-1.87	0.72	0	5	12	14	5	w.	Wm. Atkin.		
Battle Creek.....	Calhoun.....	822	27	72.8	-0.5	100	5	46	26	34	1.13	-2.36	0.56	0	5	19	7	5	s.	Elmer E. Sager.		
Bay City.....	Bay.....	593	15	73.6	+2.3	110	2	50	17†	35	1.80	-1.46	1.00	0	4	30	0	1	sw.	Pere Marquette R. R.		
Benzonia.....	Benzie.....	832	15																	Martin S. Joiner.		
Berlin.....	St. Clair.....	22	72.2	+2.4	104	5	46	26	41	2.38	-0.35	0.83	0	9	9	17	5	sw.	R. O. Gould.			
Michigan.																						
Big Rapids.....	Mecosta.....	906	15	70.2	+1.7	99	5	44	27	36	1.48	-2.51	0.40	0	8	26	3	2	sw.	Charlie Gay.		
Bloomingdale.....	Van Buren.....	7	72.9		105	5	48	17†	35	0.68		0.29	0	4	27	1	3	sw.	John M. Haven.			
Cadillac.....	Wexford.....	1,293	2	70.4		96	3	44	24	33	2.10		0.90	0	6	26	1	4	nw.	Cadillac W. & L. Co.		
Cassopolis.....	Cass.....	903	10																	Michigan Central R. R.		
Charlevoix.....	Charlevoix.....	610	33	69.6	+2.0	99	2	44	19	41	2.41	-0.13	0.65	0	6	16	10	5	nw.	Pere Marquette R. R.		
Charlotte.....	Eaton.....	7				98	5					1.56	0.95	0	4	24	3	4	sw.	City of Charlotte.		
Cheboygan.....	Cheboygan.....	611	21	69.6	+2.8	99	2	40	17	41	2.80	-0.21	1.05	0	9	4	25	2	w.	E. A. Bouchard.		
Clinton.....	Lenawee.....	830	21	72.8	+0.2	102	4	45	26	37	1.58	-1.55	1.22	0	4	21	9	1	sw.	David Woodward.		
Coldwater.....	Branch.....	984	14	73.4	+1.4	101	5	46	26	33	1.72	-3.01	1.00	0	6	25	2	4	s.	L. S. & M. S. Ry.		
Concord.....	Jackson.....	6	72.2		101	5	42	26	37	1.83		0.94	0	4	15	16	0	sw.	W. N. Armstrong.			
Croton.....	Newaygo.....	685	3	71.8		98	5	46	27	33	2.14		1.44	0	7	13	17	1	sw.	G. R. M. P. Co.		
Detroit.....	Wayne.....	730	40	73.6	+1.6	100	3	52	26	25	0.79	-2.69	0.25	0	9	15	11	5	sw.	U. S. Weather Bureau.		
Durand.....	Shiawassee.....	799	4	74.9		104	4	38	28	47				0	14*	3*	9*	sw.	H. J. Tobin.			
East Tawas.....	Iosco.....	590	14	68.9	+0.8	100	2	42	18	30	1.55	-2.44	0.35	0	7	24	6	1	w.	D. & M. Ry.		
Eloise.....	Wayne.....	640	14	74.0	+1.2	103	3	51	23	35	1.34	-2.13	0.97	0	6	19	7	5	sw.	John Gilmore.		
Flint.....	Genesee.....	730	22	70.6	+0.7	101	7	48	18	41*	0.89	-1.87	0.50	0	6	18	8	5	w.	William L. Fisher.		
Frankfort.....	Benzie.....	589	7	68.2		92	4	52	17	24	1.53		0.50	0	6	19	0	12	s.	Geo. Morency.		
Ganges.....	Allegan.....	665	2	72.4		95	5	51	17	27	1.49		0.58	0	8	23	4	4	sw.	H. H. Hutchins.		
Gaylord.....	Otsego.....	6	67.3*		95	2†	47	17	47				0	5	14	12	sw.	Michigan Central R. R.				
Gladwin.....	Gladwin.....	794	15	69.4	+0.3	98	11	41	18	43				0	18*	4*	1*	sw.	Geo. R. Smith.			
Grand Haven.....	Ottawa.....	626	30	71.6	+1.9	94	4	51	17	26	0.88	-1.70	0.42	0	7	25	4	2	s.	U. S. Weather Bureau.		
Grand Rapids.....	Kent.....	707	22	73.6	+1.0	100	4	51	26	28	1.25	-1.38	0.58	0	5	17	11	3	w.	Do.		
Grape.....	Monroe.....	625	21	73.0	+0.8	100	3	47	26	33	2.73	-0.15	1.70	0	6	18	10	3	sw.	Joseph W. Morris.		
Grass Lake.....	Jackson.....	989	5	72.4		100	5	45	14	48	1.65		1.05	0	3	23	0	8	sw.	Menzo Conklin.		
Grayling.....	Crawford.....	1,147	21	69.4	+1.9	98	2†	40	25	40	1.56	-1.60	0.62	0	10	18	9	4	w.	S. N. Insley.		
Harbor Beach.....	Huron.....	635	23	67.2	-0.7	102	5	40	18	44	1.45	-0.86	0.60	0	6	26	1	4	s.	Pere Marquette R. R.		
Harrison.....	Clare.....	1,159	18	72.2	+3.7	100	3†	47	17	41	0.42	-2.26	0.42	0	1	27	2	2	w.	Do.		
Harrisville.....	Alcona.....	616	27	68.3	+1.4	101	2	46	17	35	1.22	-1.74	0.37	0	9	11	14	6	se.	D. W. Mitchell.		
Hart.....	Oceana.....	698	19											0	6	15	12	4	sw.	Pere Marquette R. R.		
Hayes.....	Huron.....	620	21	71.2	+2.5	100	5	50	20†	39	1.70	-1.02	0.80	0	6	15	12	4	sw.	C. F. Lippoldt.		
Highland.....	Oakland.....	830	19											0	6	15	12	4	sw.	A. D. De Garmo.		
Hillsdale.....	Hillsdale.....	1,150	14	72.6	+1.2	101	4†	49	18†	36	1.81	-2.16	1.04	0	6	26	3	2	sw.	C. L. Herron.		
Holland.....	Ottawa.....	610	5	72.5		99	5	47	26	32	1.21		0.58	0	5	22	9	0	sw.	City of Holland.		
Howell.....	Livingston.....	924	19	72.1	+1.7	100	5	45	26	38	2.25	-0.58	1.00	0	3	23	3	5	sw.	Frank Sharp.		
Ivan.....	Kalkaska.....	22	69.8	+1.8	100	5	40	17	37	1.53	-1.31	0.50	0	8	16	12	3	nw.	O. L. Giddings.			
Jackson.....	Jackson.....	927	14	73.0	+0.3	103	5	46	26	39	1.16	-2.40	0.46	0	5	17	11	3	sw.	City of Jackson.		
Jeddo.....	St. Clair.....	667	22	71.8	+2.3	103	5	47	26	36	1.55	-1.38	0.63	0	7	19	7	5	sw.	William Bice.		
Kalamazoo.....	Kalamazoo.....	935	35											0	21	8	2	se.	Kalamazoo Asylum.			
Lansing (Agr. College).....	Ingham.....	820	47	71.3	+0.2	99	5	44	26	32	1.65	-1.63	0.72	0	8	19	7	5	sw.	U. S. Weather Bureau.		
Lansing (capital).....	do.....	881	24	73.0	+1.9	100	5	46	26	32	1.04	-2.36	0.50	0	7	19	4	8	sw.	State Board of Health.		
Lapeer.....	Lapeer.....	827	12	74.5	+3.2	103	5	48	26	34	1.37	-1.45	0.77	0	4	16	14	1	w.	Michigan Home.		
Ludington.....	Mason.....	586	13	70.6	+2.8	98	4	47	17	37	1.58	-0.92	0.58	0	4	27	3	1	sw.	Pere Marquette R. R.		
Luther.....	Lake.....	1,028	1	69.8		102	5	37	17	38	2.03		0.57	0	10	18	11	2	w.	John W. Nichoson.		
Mackinaw.....	Cheboygan.....	592	15	67.8	+0.8	98	2	46	26	35	1.74	-1.76	0.76	0	6	17	11	3	w.	G. R. & Ind. Ry.		
Mancelona.....	Anttrim.....	1,121	15	69.8	+2.4	100	2	40	17	48	1.62	-1.08	1.20	0	4	28	1	2	se.	Do.		
Manistee.....	Manistee.....	600	14	72.7	+7.5	99	5	47	17	46	2.60	-0.67	1.33	0	6	21	2	3	sw.	Pere Marquette R. R.		
Midland.....	Midland.....	604	12	74.6	+3.9	103	3	48	25	41	2.25		1.00	0	7	21	2	1	w.	George J. Tripp.		
Morenci.....	Lenawee.....	811	4			96	3†						3.19	-0.45	1.06	0	6	5	21	5	w.	Waterworks.
Mount Clemens.....	Macomb.....	615	11			106	5						0.99	-1.78	0.56	0	3	23	0	5	w.	Pere Marquette R. R.
Mount Pleasant.....	Isabella.....	826	12										0.48	-3.33	0.30	0	3	26	4	1	sw.	G. R. & Ind. Ry.
Muskegon.....	Muskegon.....	587	15	73.0	+2.8	97	4	52	24†	28	0.48	-3.33	0.30	0	8	13	15	3	sw.	E. O. Ladd.		
Old Mission.....	Grand Traverse.....	858	17	70.4	+2.4	97	2	48	24	32	2.68	-0.43	1.00	0	8	13	15	3	sw.	G. A. Knapp.		
Olivet.....	Eaton.....	934	21	71.5	+0.9	95	3†	47	26	28	1.26	-3.09	0.70	0	6	21	6	0	w.	D. & M. Ry.		
Omer.....	Arenac.....	616	12	71.8	+4.8	100	5	43	18	45	0.20	-2.35	0.20	0	1	6	17	8	5	w.	Do.	
Onaway.....	Presque Isle.....	826	8	68.0	+2.0	100	2	44	16	44	0.20	-2.35	0.20	0	3	23	3	5	w.	Owosso Sugar Co.		
Owosso.....	Shiawassee.....	731	14	73.0	+0.5	100	5†	47	26†	33	1.95	-2.41	0.54	0	8	6*	24*	0	nw.	G. R. & Ind. Ry.		
Petroskey.....	Emmet.....	660	21	68.2	+1.5	97	9	44	17	34	1.88	-0.70	0.90	0	8	17	10	4	w.	Pere Marquette R. R.		
Plymouth.....	Wayne.....	725	14			107	5						0	0	1	6	17	8	5	w.	Do.	
Pontiac.....	Oakland.....	935	11	74.0	+3.5	104	5	49	26	32	1.72	-1.31	0.96	0	5	24	3	4	sw.	Pere Marquette R. R.		
Port Austin.....	Huron.....	618	14	73.2		109	3	44	18	47*	2.20		1.18	0	6	22	3	6	ne.	Fred W. Shaw.		
Port Huron.....	St. Clair.....	639	36	71.5	+2.5	101	3	49	26	31	1.											

TABLE 1.—Climatological data for July, 1911. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.	Prevailing wind direction.	Observers.			
				Mean.	Departure from the normal.			Lowest.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmeted.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.				
					Highest.	Date.	Date.														
Ohio—Continued.																					
Defiance.	Defiance.	712	17	72.8	— 0.3	100	4	42	22	40	1.35	— 2.72	0.62	0	10	21	4	s.	John F. Heilshorn.		
Findlay.	Hancock.	776	22	74.6	+ 0.4	105	4	46	18	40	1.79	— 2.05	0.62	0	7	26	5	w.	Dr. E. A. Moser.		
Fremont.	Sandusky.	628	9	74.7	— 1.3	102	3	49	26	35	1.28	— 2.11	0.34	0	7	21	7	sw.	E. Stanley Thomas.		
Hedges.	Paulding.	725	17	72.0*	+ 1.1	101	3	46	26	36*	1.24	— 2.11	0.54	0	7	19	10	nw.	Charles Stutzman.		
Hillhouse.	Lake.	997	18	71.7	+ 1.1	96	5	47	27	31	2.44	— 2.17	1.55	0	7	19	10	w.	J. W. Doncaster.		
Hiram.	Portage.	1,260	31	73.0	+ 1.9	97	3†	50	26	28	2.65	— 1.08	0.91	0	7	19	7	sw.	Prof. G. H. Colton.		
Hudson.	Summit.	1,153	50	74.8	+ 2.5	103	4	46	26	39	1.21	— 2.96	0.39	0	6	21	10	sw.	Dr. W. J. Chamberlain.		
Lima.	Allen.	875	12	73.3	+ 0.2	98	4	48	22†	35	0.75	— 2.61	0.59	0	4	17	13	s.	Miss Ollie De Long.		
Medina.	Medina.	944	23	72.6	+ 0.2	102	4	44	27	39	2.75	— 1.62	2.00	0	6	24	5	s.	F. W. Clark.		
Montpelier.	Williams.	880	19	73.4	+ 1.0	100	3†	45	26	37	2.28	— 1.69	1.50	0	4	26	3	w.	G. L. Laser.		
Napoleon.	Henry.	680	24	73.6	+ 0.6	100	3†	48	26	36	2.43	— 0.97	0.68	0	10	21	6	w.	A. C. Senter.		
New Bremen.	Auglaize.	1,038	18	73.9	— 0.3	102	4	47	25	37	1.28	— 1.93	0.40	0	6	12	4	sw.	Miss Lillian Grothaus.		
North Royalton.	Cuyahoga.	1,000	18	72.9	+ 0.5	101	3	48	26	40	2.47	— 1.98	1.05	0	6	17	14	w.	W. S. Edgerton.		
Norwalk.	Huron.	719	25	74.6	+ 1.7	103	4	46	27	40	1.24	— 3.23	0.40	0	4	16	12	w.	Dr. Albert Sheldon.		
Oberlin.	Lorain.	855	36	73.7	+ 1.3	103	4	45	27	38	2.96	— 0.81	1.10	0	6	17	8	ne.	Prof. F. F. Jewett.		
Ottawa.	Putnam.	720	16	73.1	+ 0.7	100	4	47	26	34	3.43	— 0.33	1.86	0	7	5	22	sw.	Prof. J. T. Maidlow.		
Sandusky.	Erle.	629	34	74.4	+ 0.8	98	3	53	26	29	2.09	— 1.70	0.74	0	8	15	11	sw.	U. S. Weather Bureau.		
Tiffin.	Seneca.	775	29	74.2	+ 0.6	100	4	51	18†	30	2.72	— 1.23	0.90	0	6	20	9	s.	Prof. T. H. Sonnedecker.		
Toledo (1).	Lucas.	769	40	74.6	+ 0.9	100	3	52	26	24	1.25	— 1.99	0.49	0	9	20	9	sw.	U. S. Weather Bureau.		
Toledo (2).	do.	606	7	73.2	+ 0.6	101	3	48	26†	33	2.62	— 0.96	0.68	0	9	8	15	w.	J. A. Krane, S. J.		
Upper Sandusky.	Wyandot.	854	28	73.2	+ 0.6	101	3	48	26†	33	2.62	— 0.96	0.68	0	9	10	18	sw.	Robert E. Tracht.		
Vickery.	Sandusky.	588	18	74.2	+ 1.0	102	3	47	27	40	1.77	— 2.39	1.00	0	10	17	11	s.	John W. Barr.		
Waunakee.	Fulton.	780	39	73.1	+ 0.3	99	4	46	26	37	2.45	— 1.49	0.69	0	10	21	3	sw.	Thomas Mikesell.		
Willoughby.	Lake.	649	17	74.2	—	—	—	—	—	—	3.56	— 0.02	2.34	0	7	21	3	sw.	C. M. Richardson.		
Pennsylvania.																					
Erie.	Erie.	658	38	73.8	+ 1.0	96	5	53	27	21	2.14	— 1.07	1.17	0	8	13	11	7	s.	U. S. Weather Bureau.	
New York.																					
Adams Center.	Jefferson.	540	20	71.8	+ 1.9	97	5	50	27	30	3.26	— 1.22	2.64	0	6	22	7	s.	A. E. Cooley.		
Angelica.	Allegany.	1,340	28	68.0	+ 0.4	96	4†	37	27	41	2.04	— 2.16	0.72	0	8	3	20	w.	C. P. Arnold.		
Appleton.	Niagara.	270	20	73.0	+ 3.3	106	5	47	28	36	1.43	— 2.53	0.83	0	6	18	10	sw.	H. A. Van Wagoner.		
Auburn.	Cayuga.	715	42	72.5	+ 2.0	100	5	50	26	32	2.61	— 1.18	1.10	0	8	26	4	s.	A. H. Underwood.		
Avon.	Livingston.	585	16	73.6	+ 2.7	103	5	46	27	35	2.73	— 1.04	1.36	0	7	25	1	w.	W. G. Markham.		
Blue Mountain Lake.	Hamilton.	1,750	11	74.6	+ 3.4	104	5	50	27	34	1.18	— 3.14	0.75	0	7	25	4	w.	B. F. Merwin.		
Brockport.	Monroe.	537	15	74.6	+ 3.4	104	5	50	27	34	1.18	— 3.14	0.76	0	8	14	17	sw.	W. H. Lennon.		
Buffalo.	Erie.	767	60	71.6	+ 1.4	95	5	56	26	24	4.41	+ 1.01	2.91	0	8	14	13	sw.	U. S. Weather Bureau.		
Canton.	St. Lawrence.	448	17	70.8	+ 1.9	98	5	50	27	34	4.88	+ 1.65	2.01	0	10	12	14	w.	Do.		
Cape Vincent.	Jefferson.	246	6	69.6	—	92	6	51	27	37	3.18	— 1.18	1.72	0	7	16	10	s.	V. M. Rice.		
Carvers Falls.	Washington.	243	13	70.3	+ 1.4	99	3†	41	25	33	2.37	— 1.18	0.80	0	5	24	5	s.	Washburn Fancher, C. E.		
Chazy.	Clinton.	151	11	74.8*	+ 6.0	104	3	48	8	45	1.80	— 2.26	0.67	0	5	25	4	s.	W. R. North.		
Dannemora.	Clinton.	1,490	6	72.1	—	96	3†	49	26	33	2.62	— 0.58	0.58	0	12	14	11	s.	Dr. W. N. Thayer.		
Elba.	Genesee.	500	12	71.4	+ 1.8	100	5	47	18	39	1.15	— 3.69	0.70	0	3	23	5	sw.	Joseph S. Willford.		
Faust.	Franklin.	1,550	0	73.4	+ 1.8	103	5	50	21†	35	3.49	— 0.48	1.01	0	10	22	7	w.	Santa Clara Lumber Co.		
Fayetteville.	Onondaga.	530	10	73.4	+ 1.8	103	5	50	21†	35	3.49	— 0.48	1.01	0	8	15	12	sw.	D. H. Wells.		
Gabriels.	Franklin.	1,729	9	66.8	—	96	3	38	24	27	2.74	— 0.70	0.50	0	11	17	10	w.	Gabriels Sanatorium.		
Harkness.	Clinton.	622	9	73.7	+ 4.7	102	3	48	27	37	1.81	— 1.85	0.50	0	10	24	5	w.	J. W. Harkness.		
Hemlock Lake.	Livingston.	900	13	72.8	+ 1.9	98	5	53	27	29	3.40	— 0.64	1.87	0	6	15	10	sw.	D. H. Westbury.		
Hunt.	do.	1,321	12	72.5	+ 2.4	100	3†	44	27	34	3.71	— 0.85	2.02	0	7	24	6	sw.	W. S. Barager.		
Ithaca.	Tompkins.	928	33	73.4	+ 2.8	102	4	50	27	37	2.53	— 1.22	1.21	0	12	11	15	w.	U. S. Weather Bureau.		
Keene Valley.	Essex.	1,000	13	71.1	+ 4.2	105	5	40	27	30	2.19	— 1.72	0.47	0	9	20	7	s.	E. R. Wells.		
King Ferry.	Cayuga.	11	—	—	—	—	—	—	—	—	2.00	— 2.09	1.03	0	7	24	5	w.	L. A. Goodyear.		
Lake George.	Warren.	350	14	72.4	+ 3.6	102	4	49	26	33	2.52	— 1.79	0.70	0	8	15	12	sw.	Charles Forsell.		
Lake Placid Club.	Essex.	1,864	3	65.8	—	92	5	40	27	39	3.01	— 1.15	0	13	18	12	1	nw.	Henry Van Hoevenberg.		
Le Roy.	Genesee.	920	21	71.8	+ 2.8	99	5	49	27	33	2.86	— 0.33	1.02	0	9	12	10	sw.	F. W. Ball.		
Lockport.	Niagara.	650	24	72.2	+ 1.8	99	3†	50	18†	31	2.81	— 1.01	1.49	0	11	17	8	sw.	J. E. Wakeman.		
Lowville.	Lewis.	900	44	69.3	+ 1.8	97	5	41	27	38	2.34	— 1.37	1.42	0	5	20	9	w.	C. J. Rice.		
Moir.	Franklin.	200	11	72.6	+ 3.6	99	5	46	24†	41	2.00	— 2.38	0.80	0	5	24	6	w.	C. E. McBride.		
Nehasane.	Herkimer.	1,750	3	65.5	—	96	5	50	27	42	2.79	— 0.93	0.93	0	12	19	10	w.	L. W. Brown.		
Ogdensburg.	St. Lawrence.	175	27	72.4	+ 2.8	96	5	50	27	37	2.39	— 0.81	1.54	0	6	20	9	se.	State Hospital.		
Old Forge.	Herkimer.	1,733	3	66.0	—	95	3†	40	27	40	3.01	— 1.42	0	8	21	8	w.	Mrs. S. W. Nelson.			
Oswego.	Oswego.	335	41	71.2	+ 1.6	97	5	53	26	29	4.06	+ 0.88	3.71	0	7	12	15	4	w.	U. S. Weather Bureau.	
Otto.	Cattaraugus.	1,410	7	72.0	—	99	10	47	18	38	2.62	—	1.00	0	5	17	12	2	sw.	William Winke.	
Palermo.	Oswego.	400	52	—	—	—	—	—	—	—	3.32	— 0.04	1.00	0	8	24	6	1	sw.	E. B. Bartlett.	
P																					

TABLE 2.—*Daily precipitation for July, 1911. District No. 4, Lake region.*

Stations.	Watersheds.	Day of month.																														Total				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				
Minnesota.																																				
Cloquet.....	Lake.....	T.	T.	.69	.34																													6.14		
Duluth.....	do.....	.04	.02	.57	.24																													5.33		
Floodwood.....	do.....			.47	.13																													6.28		
Stephens Mine.....	do.....			T.	.30																													1.50		
Two Harbors.....	do.....			.25	.76																													3.62		
Virginia.....	do.....			T.	.18																													3.16		
Wisconsin.																																				
Appleton.....	Fox.....			.01																														1.85		
Ashland.....	Lake.....	.94	.11	.40	.24																													6.07		
Bayfield.....	do.....	.20		.65	.13																													5.60		
Cecil.....	Fox.....			.16																														1.95		
Florence.....	Menominee.....			.45	.02																													7.73		
Fond du Lac.....	Fox.....			T.	.06																													1.12		
Grand River Locks.....	do.....			.87																														2.35		
Green Bay.....	Lake.....			.05																														1.59		
Iron River.....	do.....			.04	.21	.11	.79	.03																									7.48			
Keweenaw.....	do.....			T.																														2.00		
Manitowoc.....	Fox.....			.93																														2.71		
Menasha.....	do.....			T.																														1.23		
Menomonee Falls.....	Fox.....	.10			.12																													46		
Milwaukee.....	Lake.....	.18		T.																														1.71		
New London.....	Fox.....			.03																														0.62		
Oconto.....	Lake.....			.05																														1.72		
Oshkosh.....	Fox.....			T.	.05																													3.30		
Pine River.....	do.....			.10																														2.00		
Plum Island.....	Lake.....	.03			.07																													2.00		
Plymouth.....	do.....			.01																														1.20		
Port Washington.....	do.....				.12																													0.52		
Racine.....	do.....																																		0.97	
Ripon.....	Fox.....																																			0.96
Shéboygan.....	Lake.....			T.	T.																														0.96	
Sturgeon Bay.....	do.....			.01	T.																														2.85	
Superior II.....	do.....	.15	.29	.14	.40	.14																												57		
Waupaca.....	Fox.....			.11	.19																														3.14	
Illinois.																																				
Chicago.....	Lake.....			T.		.11		.03	.04																									41		
Highland Park.....	do.....			.15				.06																										1.57		
Indiana.																																				
Auburn II.....	Maumee.....																																		2.85	
Berne.....	do.....			T.		.22																													2.91	
Elkhart.....	St. Joseph.....																																		4.12	
Fort Wayne.....	Maumee.....	.07																																	2.19	
Hammond.....	L. Michigan.....																																		1.50	
Howe II.....	St. Joseph.....																																		2.57	
South Bend II.....	do.....																																		T. 1.16	
Whiting.....	L. Michigan.....																																			
Michigan—Upper Peninsula.																																				
Baraga.....	Lake.....			1.00																														4.00		
Bergland.....	do.....	.20																																	6.54	
Blaney.....	Manistique.....																																		5.26	
Calumet.....	Lake.....	.07		.14	.51			.33		.06																							4.70			
Chatham.....	do.....			.11	.18	.42		.96																									2.60			
Deer Park.....	T.			.40		T.		T.																										4.20		
Detour.....	St. Marys.....			.08				.40	.11																								2.00			
Eagle Harbor.....	Lake.....	.08						.01	.12																								4.26			
Escanaba.....	do.....			.07		.07		.11																									6.63			
Ewen.....	Ontonagon.....																																			
Grand Marais.....	Lake.....	.90		.01</																																

TABLE 2.—*Daily precipitation for July, 1911. District No. 4—Continued.*

TABLE 2.—*Daily precipitation for July, 1911. District No. 4—Continued.*

* Precipitation included in that of the next measurement.

* Precipitation included in that of this month.
† Separate dates of falls not recorded.

||| Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.

TABLE 3.—Maximum and minimum temperatures at selected stations for July, 1911. District No. 4, Lake Region.

Date.	Duluth, Minn.		Wisconsin.						Chicago, Ill.		Fort Wayne, Ind.		Michigan.														
			Florence.		Green Bay.		Milwaukee.						Escanaba.		Ewen.		Houghton.		Marquette.		Sault Ste. Marie.		Alpena.		Battle Creek.		Cadillac.
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1....	92	66	98	64	95	72	95	73	96	75	93	68	84	67	.....	98	70	101	69	92	57	98	64	94	65	93	70
2....	88	63	99	70	97	76	98	77	98	79	97	72	88	70	.....	88	64	104	68	97	62	101	73	96	70	95	71
3....	87	63	89	63	85	72	99	69	100	77	99	75	80	68	.....	84	64	79	63	75	58	92	70	98	73	96	74
4....	72	52	81	60	83	67	94	68	102	78	100	74	76	66	.....	78	64	76	60	81	55	78	63	99	70	94	75
5....	88	56	86	65	84	71	96	74	102	82	98	75	80	66	.....	86	59	89	61	86	61	88	63	100	74	96	74
6....	71	53	80	60	79	60	78	66	87	72	90	74	72	59	.....	72	54	64	53	64	50	79	60	92	71	95	62
7....	64	54	81	46	80	57	76	64	80	72	86	67	71	49	.....	74	52	67	50	78	48	71	55	87	64	86	53
8....	83	55	91	58	94	64	82	69	90	74	94	68	79	67	.....	95	58	94	62	83	56	75	55	95	64	90	63
9....	80	61	89	60	93	68	92	73	94	77	92	72	79	69	.....	90	67	93	64	92	65	95	67	94	71	88	75
10....	82	61	83	58	87	67	89	71	91	74	89	73	79	64	.....	86	62	86	65	84	65	88	71	90	71	82	68
11....	68	54	79	59	87	61	90	72	86	76	92	70	84	57	.....	70	57	80	59	83	55	92	58	94	70	87	69
12....	75	51	72	50	78	54	79	62	80	70	81	63	75	52	.....	68	55	64	55	64	52	73	52	91	60	78	53
13....	74	54	73	49	79	59	82	67	85	68	82	59	78	51	.....	71	54	69	53	72	47	74	52	82	56	78	58
14....	79	54	75	53	77	55	81	65	79	69	85	59	77	55	.....	74	57	72	57	74	51	83	54	78	56	82	58
15....	69	50	76	53	84	58	89	66	91	67	88	58	78	56	.....	64	50	70	54	74	51	78	55	80	54	78	58
16....	66	45	65	48	66	53	68	61	73	66	79	59	65	50	.....	63	47	58	50	63	45	68	54	79	62	70	57
17....	70	48	69	45	74	51	71	56	72	61	73	54	70	46	.....	65	50	63	52	68	39	72	46	79	51	70	45
18....	68	53	73	42	78	55	80	60	85	63	83	56	71	52	.....	70	54	75	55	74	48	75	49	82	48	72	56
19....	76	51	75	50	76	58	75	64	81	67	78	65	70	56	.....	71	55	66	52	65	53	73	55	78	60	74	58
20....	77	52	78	49	79	56	76	60	74	67	82	65	73	53	.....	76	53	79	55	76	47	71	49	81	54	79	50
21....	74	49	71	48	75	53	72	61	73	68	83	59	73	50	.....	69	55	72	52	63	53	75	53	81	59	73	55
22....	78	51	80	55	83	60	77	63	80	54	80	56	76	52	.....	75	54	76	56	64	50	76	51	81	52	76	57
23....	61	50	76	50	66	56	72	57	75	63	77	57	65	60	.....	62	46	68	53	64	50	69	51	78	56	71	54
24....	64	47	61	48	60	51	64	55	67	57	71	51	60	48	.....	53	46	53	46	56	51	62	51	67	52	64	44
25....	71	50	65	45	66	48	67	54	68	53	68	49	64	47	.....	63	50	65	50	52	49	60	51	69	51	61	47
26....	75	55	77	46	78	52	74	54	71	55	73	50	70	51	.....	74	54	73	54	73	47	70	52	76	46	77	52
27....	72	58	77	50	82	57	73	59	81	62	79	55	69	54	.....	84	55	80	60	79	49	70	50	81	47	72	54
28....	78	60	83	58	78	66	79	63	79	66	85	64	59	58	.....	73	64	71	59	73	54	68	58	85	53	77	62
29....	81	61	84	58	87	63	75	65	79	60	75	63	73	59	.....	81	63	86	61	78	60	76	63	82	60	81	63
30....	73	55	87	50	90	64	86	63	88	66	85	61	71	61	.....	75	63	77	63	84	58	87	61	87	65	85	63
31....	67	53	82	59	87	62	77	58	86	70	88	66	72	62	.....	73	58	77	59	81	62	77	65	89	63	84	64
Mns..	74.9	54.4	78.9	54.2	80.8	60.0	81.0	64.1	83.5	68.5	84.7	69.2	73.7	57.3	.....	75.1	56.6	75.8	56.9	74.2	53.2	77.5	57.2	85.7	59.9	80.9	60.0

Date.	Michigan.						Ohio.						Erie, Pa.						New York.						Vermont.				
	Detroit.		Muskegon.		Saginaw, West Side.		Cleveland.		Lima.		Sandusky.		Toledo.		Buffalo.		Canton.		Rochester.		Syracuse.		Burling- ton.		Northfield.				
Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1....	90	68	90	62	97	68	93	64	92	62	91	67	93	69	92	62	77	65	83	56	89	59	86	58	85	55	84	47	
2....	98	75	91	72	99	71	90	72	96	73	97	75	97	76	98	77	82	74	95	74	100	75	96	78	94	57	89	62	
3....	100	78	95	79	100	72	94	76	96	69	98	76	100	76	92	77	82	74	95	74	100	75	98	76	96	78	96	64	
4....	94	69	97	72	97	67	92	76	98	73	90	89	95	73	93	78	90	74	93	66	93	77	93	76	94	78	96	64	
5....	96	77	95	83	101	72	96	76	95	74	98	76	97	77	95	77	95	77	101	73	100	75	98	76	97	58	97	58	
6....	88	64	90	72	89	70	88	73	95	72	94	75	94	73	88	75	86	73	93	75	91	74	95	76	98	78	96	68	
7....	85	60	86	60	87	61	78	71	88	69	80	71	81	63	79	73	86	75	88	76	75	77	88	78	95	77	94	68	
8....	92	67	93	68	96	62	83	68	89	70	87	57	69	93	72	85	70	89	66	86									